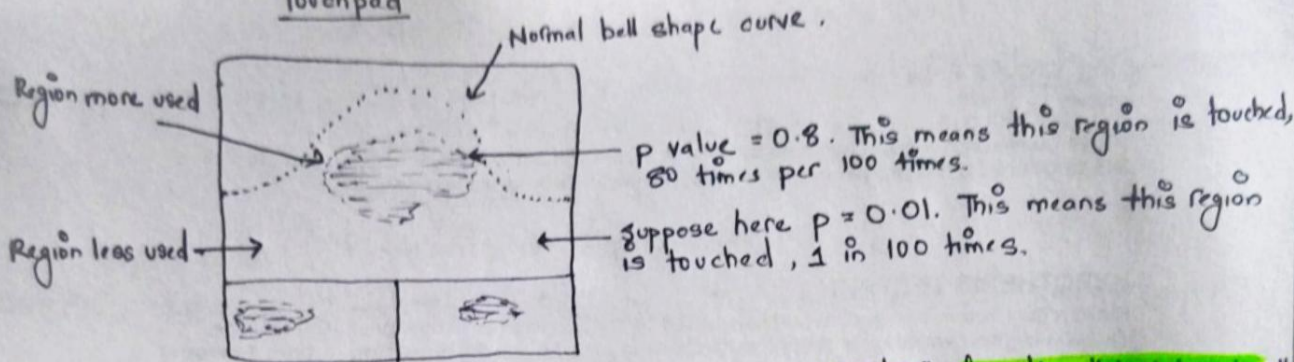


P values

Touchpad



Statistical definition of P value → P value is the "probability" for the "Null hypothesis" to be "True".

Null hypothesis → It is a hypothesis which treat everything same and everything equal.

Consider 2 groups of 4 plants each : Group 1 → 4 plants → Fertilizer A.
Group 2 → 4 plants → Fertilizer B.

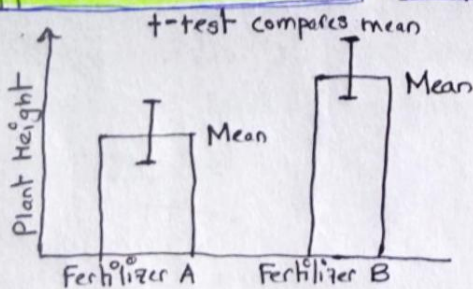
Here null hypothesis is there will be no difference in the effect of fertilizers A and fertilizers B.

So we can apply many statistical test like t test (comparison of mean), F test (comparison of Variance), ANNOVA (analysis of Variance) etc. In each test, it is judged on the basis of p value obtained.

P value can take any value ranges from 0 to 1.

Suppose $P = 0.1$, suggest 10 out of 100 times, 10 times null hypothesis will be true.
 $P = 0.3$, suggest 30 out of 100 times, 30 times null hypothesis will be true.
 $P = 0.05$, suggest 5 out of 100 times, 5 times null hypothesis will be true.

Suppose consider T test (comparison of mean)



Suppose T test Result,

$p = 0.03$, then 3 out of 100 times, 3 times null hypothesis will be true.

Our null hypothesis was there will be no difference in effect of fertilizers A and B.

So, should we consider this p-value significant or not? It totally depend on you.

Suppose, 0.05 is the level of significance. Then in this case $P < 0.05$, so we have to reject the NULL hypothesis. So we have to conclude Fertilizers A and fertilizer B are significantly different.

Suppose, 0.01 is the level of significances. Then in this case $p > 0.01$, so we have to accept the NULL hypothesis. So we have to conclude Fertilizers A and Fertilizers B are same (no significant difference).

P value > level of significance → Null hypothesis is accepted.

P value < level of significance → Null hypothesis is rejected.